

the successful operant conditioning of a particular pattern of the targeted brain activity via NFB that is responsible for improved performance and not due to placebo effects or other extraneous factors.

Neurofeedback: An Evidence-Based Treatment for ADHD

Key Points:

- *Neurofeedback to treat ADHD is built on basic neuroscience research demonstrating that cats can learn, via operant conditioning, to increase their sensory motor rhythm resulting in behavioral changes such as them becoming physically calm while still highly alert*
- *The first neurofeedback study to treat ADHD was seminal and used a reversal design to demonstrate that when neurofeedback was used to reinforce the sensory motor rhythm the children's core ADHD symptoms decreased and when neurofeedback was used to suppress this EEG rhythm the children's symptoms increased*
- *It can be argued that neurofeedback's scientific foundation is as good or even superior to psychopharmacology research in which each of its major medication classes were discovered by accident in the 1950s and 60s. Multiple NIMH-funded comparative effectiveness studies have now demonstrated that despite billions of dollars spent in research, the outcomes from psychotropic drug treatment while helpful to millions of people during the acute phases of these illnesses have not produced the long-term positive outcomes that everyone had hoped for*
- *Randomized controlled trials have found neurofeedback to be equivalent to stimulant medication—and superior to EMG biofeedback, computerized cognitive training, and cognitive behavioral training—in treating the core symptoms of ADHD. Given this research data and the fact that many parents, patients, health professionals and teachers are desperately looking for alternatives to stimulant medications, it is surprising that more insurers do not reimburse for NFB treatment*
- *In five studies neurofeedback has been found to result in sustained benefits when reassessed even up to two years after the end of treatment and these findings are in stark contrast to the lack of sustained benefit from either behavior therapy or stimulant medication as documented in the MTA Cooperative study*
- *A 2009 meta-analysis of neurofeedback involving 1,194 ADHD subjects concluded that neurofeedback meets the highest level of evidence-based support for the treatment of ADHD "with a large effect size for inattention and impulsivity and a medium effective size for hyperactivity"*
- *A recent meta-analysis comparing seven non-pharmacological treatments for ADHD found that neurofeedback was more than twice as effective as the other treatments with an average weighted effect size of .21 compared to effect sizes of only .09 or less for each of the other six behaviorally-based treatments and this analysis did not even include four rigorously controlled NFB studies because they were published after cut-off date for inclusion*
- *In October 2012, the company that maintains the American Academy of Pediatrics' ranking of research support for child and adolescent non-pharmacological treatments, elevated neurofeedback to the highest level of evidence-based support for the treatment of ADHD*